

## What is Open Science and How is it Changing Research

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Around twenty of our members discovered what Open Science (OS) is through an entertaining talk from Rose and Fotis. For those who were not there, Open Science is defined as “a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools ... sharing and using all available knowledge at an earlier stage in the research process: allowing end users to be producers of ideas, relations and services and in doing so enabling new working models, new social relationships and leading to a new modus operandi for science.” (European Commission 2016)

On the basis that a picture is worth ....., this graphic was used to explain what aspects are covered by Open Science:

They started by referring to the Open Access icon at the top of the diagram. Making publications open access means that research is disseminated more widely and benefits the researcher in terms of more citations which helps their career. Pre-prints involve publishing early without waiting for peer review. This enables feedback at an early stage, allowing for corrections or more explanation, or even retraction, before the article is submitted to the lengthy peer review process. There is a danger, however, that the process can be used to publish poor research, possibly from a layman with an axe to grind.



Open research data allows others to look at the data you have used to form your conclusions with a fresh eye and to spot errors, unintentional or otherwise. They can also attempt to reproduce your findings – this is often not possible, leading to a ‘reproducibility crisis’ in current science. More than 10,000 published papers were retracted in 2023.

Again there is a potential problem with insistence on reproducibility. If I publish results of a study in rural Crete, there may be many reasons why I can’t reproduce the results in a similar study in England or Ghana.

Open research data also allows those not in academic research to be involved – Citizen Science. For example, more than 50% of data for biodiversity comes from Citizen Science.

Those who collect the data, particularly in the field of agricultural science, have a big investment in it – do the researchers and those who make use of their work always respect this or even recognise it?

Clearly there is a lot of work for those looking at the philosophy of open science, including Rose and Fotis, still to do.